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PATENT APPLICATION

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Inventor(s): Winthrop D. Childers et al.

Confirmation No.: 2745

Application No.: 10/817,012

Examiner: SHEPARD, Justin E.

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Group Art Unit: 2424

Title: Method and System for Displaying an Image in Three Dimensions

Mail Stop Appeal Brief - Patents  
Commissioner For Patents  
PO Box 1450  
Alexandria, VA 22313-1450

TRANSMITTAL OF REPLY BRIEF

Transmitted herewith is the Reply Brief with respect to the Examiner's Answer mailed on June 10, 2009 .

This Reply Brief is being filed pursuant to 37 CFR 1.193(b) within two months of the date of the Examiner's Answer.

(Note: Extensions of time are not allowed under 37 CFR 1.136(a))

(Note: Failure to file a Reply Brief will result in dismissal of the Appeal as to the claims made subject to an expressly stated new ground rejection.)

No fee is required for filing of this Reply Brief.

If any fees are required please charge Deposit Account 08-2025.

Respectfully submitted,  
Winthrop D. Childers et al.

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**REPLY BRIEF**

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Sir:

This is a Reply Brief under Rule 41.41 (37 C.F.R) in response to the Examiner's Answer of June 10, 2009 (the "Examiner's Answer" or the "Answer"). In Section 10, the Answer contains a response to some of the arguments made in Appellant's brief. Appellant now responds to the Examiner's Answer as follows.

**Status of Claims**

The Answer does not change the status of the claims.

Claims 59 and 60 have been withdrawn from consideration pursuant to a Restriction Requirement. Thus, claims 1-58 and 61-67 are currently pending.

These claims have been more than twice rejected. Consequently, Appellant hereby appeals from the latest rejection of claims 1-58 and 61-67, hoping this time to bring the matter before the Board of Patent Appeals and Interferences.

All the pending claims are presented in the Appendix of Appellant's Brief.

**Grounds of Rejection to be Reviewed on Appeal**

In the latest Office Action of 1/30/08, no less than 25 separate grounds of rejection were made. The Answer makes no change to these grounds of rejection, which are listed below in the order given in the latest Office Action.

(1) Claims 1, 5-7 and 46 were rejected under 35 U.S.C. § 103(a) over the combined teachings of U.S. Patent No. 5,671,007 to Songer (“Songer”), U.S. Patent No. 6,335,755 to McLaine et al. (“McLaine”) and U.S. Patent Application Publication No. 2004/0252756 to Smith (“Smith”).

(2) Claim 18 was rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Songer, McLaine, Smith and U.S. Patent Application Publication No. 2003/0112507 to Divelbiss et al. (“Divelbiss”).

(3) Claim 2 was rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Songer, McLaine, Smith and U.S. Patent No. 5,870,137 to Stuetzler (“Stuetzler”).

(4) Claim 3 was rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Songer, McLaine, Smith, Stuetzler and U.S. Patent Application Publication No. 2003/0234790 to Hochmuth et al. (“Hochmuth”).

(5) Claim 4 was rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Songer, McLaine, Smith and Hochmuth.

(6) Claims 8-11 and 15 were rejected under 35 U.S.C. § 103(a) over the combined teachings of Songer, McLaine, Smith and U.S. Patent No. 4,236,172 to Krasnoperov (“Krasnoperov”).

(7) Claims 12 was rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Songer, McLaine, Smith, Krasnoperov and Divelbiss.

(8) Claim 13 was rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Songer, McLaine, Smith, Krasnoperov and Anderson (of record) (“Anderson”).

(9) Claim 14 was rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Songer, McLaine, Smith, Krasnoperov and Sato (of record) (“Sato”).

(10) Claims 16 and 17 were rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Songer, McLaine, Smith, Krasnoperov and Bolas (of record) (“Bolas”).

(11) Claims 19-26, 48, 49, 53, 55, 56, 58 and 66 were rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Divelbiss and Krasnoperov.

(12) Claims 27-30, 33-35 and 45 were rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Songer and McLaine.

(13) Claim 30 was rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Songer, McLaine and Stuetzler.

(14) Claims 31 and 32 were rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Songer, McLaine, Stuetzler and Hochmuth.

(15) Claims 36-38 were rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Songer, McLaine and Krasnoperov.

(16) Claims 39 and 40 were rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Songer, McLaine, Krasnoperov and Divelbiss.

(17) Claim 41 was rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Songer, McLaine, Krasnoperov and Sato.

(18) Claims 43 and 44 were rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Songer, McLaine, Krasnoperov and Bolas

(19) Claim 47 was rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Songer, McLaine and Anderson.

(20) Claims 50 and 54 were rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Divelbiss, Krasnoperov and Stuetzler.

(21) Claims 51 and 52 were rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Divelbiss, Krasnoperov and Bolas.

(22) Claim 57 was rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Divelbiss, Krasnoperov and Songer.

(23) Claims 61, 64 and 65 were rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Songer, Smith and Taniguchi (of record) (“Taniguchi”).

(24) Claims 62 and 63 were rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Songer, McLaine, Smith, Taniguchi and Stuetzler.

(25) Claim 67 was rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Songer, McLaine, Smith and Taniguchi.

Appellant respectfully requests review of these grounds of rejection in light of the following arguments.

### Argument

(1) Claims 1, 5-7 and 46 are patentable over Songer, McLaine and Smith:

Claim 1:

Claim 1 recites:

A method of displaying an image frame by projection in three dimensions (3D) or in two dimensions (2D) with a projection system, said method comprising:  
selecting between a 2D mode of operation and a separate 3D mode of operation for said projection system;  
*generating and projecting a left image sub-frame and a right image sub-frame during a frame period if said 3D mode of operation for said projection system is selected; and*  
*generating and projecting only a 2D image frame during said frame period if said 2D mode of operation for said projection system is selected;*  
wherein said left image sub-frame defines a visual perspective of a left eye and said right image sub-frame defines a visual perspective of a right eye.  
(emphasis added).

In contrast, the combination of Songer, McLaine and Smith fails to teach or suggest this subject matter. The Examiner has conceded that “Songer does not disclose a system for selecting between a 2D mode of operation and a separate 3D mode of operation; and including a projection display for a 2D/3D projection system.” (Action of 1/30/08, p. 3). McLaine also fails to teach a projection system as in the claimed method. Rather, McLaine teaches a cable television system in which 2D and 3D video are both generated and available on the cable network. The user’s system automatically downloads 2D or 3D video from the network depending on what fees the user has paid. (McLaine, col. 8, line 63 to col. 9, line 12).

Claim 1 recites “generating and projecting only a 2D image frame during said frame period if said 2D mode of operation for said projection system is selected.” (Claim 1) (emphasis added). It should be noted that the language of the claim draws a distinction

between “generating” and “projecting” image frames or sub-frames. “Generating” is clearly the creation of the data for either left and right image sub-frames or a 2D image, while “projecting” is the displaying, e.g., through a projection, of the frame or sub-frames. The Answer overlooks these clear implications of the claim language.

In contrast to claim 1, McLaine teaches a system in which a 3-dimensional image is *always* generated and is available, albeit for a fee. In other words, the left and right image sub-frames are always created, are always, “generated” in the McLaine system. Whether or not the left and right sub-frames are displayed is dependent on whether user has paid a fee. However, the sub-frames are always generated contrary to the language of claim 1.

Thus, the cited references together fail to teach or suggest “generating and projecting only a 2D image frame during said frame period if said 2D mode of operation for said projection system is selected.” (Claim 1) (emphasis added). There is nothing in Songer, McLaine or Smith that teaches generating and projecting only a 2D image when a 2D mode of operation is selected and generating and projecting left and right image sub-frames if a 3D mode of operation is selected.

Under the analysis required by *Graham v. John Deere*, 383 U.S. 1 (1966) to support a rejection under § 103, the scope and content of the prior art must first be determined, followed by an assessment of the differences between the prior art and the claim at issue in view of the ordinary skill in the art. In the present case, the scope and content of the prior art, as evidenced by Songer, McLaine and Smith, did not include the claimed method of selectively generating either (1) left and right sub-frames or (2) only a 2D image frame depending on whether a 3D or 2D mode of operation is selected. This subject matter is entirely outside the scope and content of the cited prior art.



Moreover, this difference between the cited prior art and the claimed subject matter is significant. As explained in Appellant's specification, the method of claim 1 provides features and advantages to the user of the projection system that were not available in the cited prior art. Consequently, the cited prior art will not support a rejection of claim 1 and its dependent claims under 35 U.S.C. § 103 and *Graham*.

(2) Claim 18 is patentable over Songer, McLaine, Smith and Divelbiss:

Appellant's claim 18 is patentable over this ground of rejection for at least the same reasons given above in favor of the patentability of claim 1.

(3) Claim 2 is patentable over Songer, McLaine, Smith and Stuetzler:

Appellant's claim 2 is patentable over this ground of rejection for at least the same reasons given above in favor of the patentability of claim 1.

(4) Claim 3 is patentable over Songer, McLaine, Smith, Stuetzler and Hochmuth:

Appellant's claim 3 is patentable over this ground of rejection for at least the same reasons given above in favor of the patentability of claim 1.

(5) Claim 4 is patentable over Songer, McLaine, Smith and Hochmuth:

Appellant's claim 4 is patentable over this ground of rejection for at least the same reasons given above in favor of the patentability of claim 1.

(6) Claims 8-11 and 15 are patentable over Songer, McLaine, Smith and Krasnoperov:

Claim 8:

Claim 8 recites “wherein said left image sub-frame comprises a first group of colors and said right image sub-frame comprises a second group of colors *distinct from said first group of colors.*” (Emphasis added).

With regard to claim 8, the Answer argues as follows. “Krasnoperov teaches that a 3D device may use yellow and cyan (column 2, lines 57-60) and that these colors are made up of multiple colors. Yellow is made up of *green* and red and cyan is made up of *green* and blue. These are interpreted as two groups of colors.” (Answer, p. 41) (emphasis added).

Clearly, the Answer has overlooked language of claim 8 specifying that the colors of the second group are “distinct from said first group of colors.” Krasnoperov cannot meet this claim language because *green* is used as a color in both the first and second “groups” identified in the teachings of Krasnoperov by the Examiner.

Thus, the cited prior art clearly fails to teach or suggest the claimed method in which “said left image sub-frame comprises a first group of colors and said right image sub-frame comprises a second group of colors *distinct from said first group of colors.*” (Emphasis added). Consequently, the cited prior art also fails to teach or suggest this subject matter of claim 8, and the rejection of claim 8 should not be sustained.

Claim 11:

Claim 11 recites “wherein said first group of colors comprises red, green, and blue and said second group of colors comprises cyan, yellow, and magenta.” As noted above, the cited prior art teaches yellow (green and red) and cyan (green and blue) as two groups of colors used. This is clearly different from the groups of colors identified in claim 11, i.e.,

“red, green, and blue” is different than green and blue (cyan) “cyan, yellow, and magenta” is different than green and red (yellow). Consequently, the cited prior art also fails to teach or suggest this subject matter of claim 11, and the rejection of claim 11 should not be sustained.

Claim 15:

Claim 15 recites “generating said colors in said first and second groups of colors with a diffractive light device.” As will be clear from the discussion of Krasnoperov above, the cited prior art fails to teach or suggest first and second groups of distinct colors corresponding to left and right image sub-frames. Consequently, the cited prior art also fails to teach or suggest this subject matter of claim 15, and the rejection of claim 15 should not be sustained.

(7) Claims 12 is patentable over Songer, McLaine, Smith, Krasnoperov and Divelbiss:

Claim 12 recites “generating said colors in said first and second groups of colors with a sequential color device.” As will be clear from the discussion of Krasnoperov above, the cited prior art fails to teach or suggest first and second groups of distinct colors corresponding to left and right image sub-frames. Consequently, the cited prior art also fails to teach or suggest this subject matter of claim 12, and the rejection of claim 12 should not be sustained.

(8) Claim 13 is patentable over Songer, McLaine, Smith, Krasnoperov and Anderson:

Claim 13 recites “generating said colors in said first and second group of colors with a scrolling color device.” As will be clear from the discussion of Krasnoperov above, the cited prior art fails to teach or suggest first and second groups of distinct colors corresponding to

left and right image sub-frames. Consequently, the cited prior art also fails to teach or suggest this subject matter of claim 13, and the rejection of claim 13 should not be sustained.

(9) Claim 14 is patentable over Songer, McLaine, Smith Kasnoperov and Sato:

Claim 14 recites “generating said colors in said first and second groups of colors with a parallel color device.” As will be clear from the discussion of Krasnoperov above, the cited prior art fails to teach or suggest first and second groups of distinct colors corresponding to left and right image sub-frames. Consequently, the cited prior art also fails to teach or suggest this subject matter of claim 14, and the rejection of claim 14 should not be sustained.

(10) Claims 16 and 17 are patentable over Songer, McLaine, Smith, Kasnoperov and Bolas:

Claim 16 and 17 are patentable over the cited prior art for at least the reasons given above in favor of the patentability of claim 1.

(11) Claims 19-26, 48, 49, 53, 55, 56, 58 and 66 are patentable over Krasnoperov and Divelbiss:

Claim 19:

Original independent claim 19 recites:

A method of displaying an image in three dimensions during a frame period, said method comprising:

generating a left image sub-frame and a right image sub-frame, said left image sub-frame defining a visual perspective of a left eye and said right image sub-frame defining a visual perspective of a right eye for said image;

displaying said left image sub-frame with an electronic display system, wherein said electronic display system outputs a display of said left image sub-frame utilizing a first plurality of colors; and

displaying said right image sub-frame with said display system, wherein said display system outputs a display of said right image sub-frame utilizing a second plurality of colors;

*wherein said first plurality of colors is distinct from said second plurality of colors.*

(Emphasis added).

Appellant wishes to note that claim 19 recites *displaying* the left sub-frame using a first plurality of colors and the right sub-frames using a second, different i.e., “distinct” plurality of colors. Moreover, this “displaying” occurs on “*an electronic display system.*” This means that a separate set of colors is used *on the electronic display* to generate/display each of the two sub-frames respectively, irrespective of what colors are perceived by a viewer wearing filter glasses.

The issue with regard to claim 19 is what is meant by the colors of the first plurality being distinct from those of the second plurality. (Answer, p. 45). Appellant believes that claim 19 would clearly convey to one of skill in the art that the colors of the first plurality are different than the colors of the second plurality.

Claim 19 earlier recites “generating a left image sub-frame and a right image sub-frame, said left image sub-frame defining a visual perspective of a left eye and said right image sub-frame defining a visual perspective of a right eye for said image.” Claim 19 continues “displaying said left image sub-frame with an electronic display system, wherein said electronic display system outputs a display of said left image sub-frame utilizing a first plurality of colors; and displaying said right image sub-frame with said display system, wherein said display system outputs a display of said right image sub-frame utilizing a second plurality of colors.”

One of skill in the art would appreciate that if a common color is used to make both the left and right sub-frames, then the two sub-frames cannot be treated differently so as to

represent to two different perspectives that give the perception of 3D. In other words, if green is used as component of the both the left and right sub-frames, as the Examiner reads Krasnoperov, it becomes impossible to provide any perception of 3D. In this regard, the Answer has provided an irrelevant numerological example to argue the language of claim 19 that is completely divorced from the underlying technology and what would be understood by one of skill in this art. (Answer, p. 45).

With the foregoing explanation, it should be inescapably clear that one of skill in the art would understand claim 19 to recite two pluralities of colors that are do not overlap, that are “distinct,” i.e., “wherein said first plurality of colors is distinct from said second plurality of colors.” This subject matter is entirely absent from the cited prior art. As the Appellant has explained in Appellant’s Brief, Krasnoperov does not teach, as the Answer still suggests, using two distinct pluralities of colors for displaying respectively, on an electronic display, left and right image sub-frames as recited in claim 19. Rather, Krasnoperov only teaches using the traditional red, green and blue colors in a stereoscopic display.

Under the analysis required by *Graham v. John Deere*, 383 U.S. 1 (1966) to support a rejection under § 103, the scope and content of the prior art must first be determined, followed by an assessment of the differences between the prior art and the claim at issue in view of the ordinary skill in the art. In the present case, neither Divelbiss nor Krasnoperov remotely teach or suggest the claimed method including displaying left and right image sub-frames with an electronic display system using, respectively, first and second “distinct” pluralities of colors. This subject matter is entirely outside the scope and content of the cited prior art. This difference between the cited prior art and the claimed subject matter is substantial. As explained in Appellant’s specification, using two distinct pluralities of colors to display left and right sub-frames of a three-dimensional image provides advantages that

were unknown and unavailable in the cited prior art. Consequently, the cited prior art will not support a rejection of claim 19 and its dependent claims under 35 U.S.C. § 103 and *Graham*.

Claim 48:

Similarly, independent claim 48 recites:

A 3D imaging device, comprising:  
an image processing unit configured to generate image sub-frame data; and  
*a color modulator electronically coupled to said image processing unit and configured to generate a plurality of image sub-frames based on said image sub-frame data;*  
*wherein said color modulator uses a first plurality of colors to output at least one image sub-frame of said plurality of image sub-frames and a second plurality of colors, distinct from said first plurality of colors, to output at least one other image sub-frame of said plurality of image sub-frames.*

(Emphasis added).

Thus, claim 48 specifically recites the hardware of a color modulator electronically coupled to an image processing unit that used two different pluralities of colors to output different image sub-frames.

As demonstrated above, Divelbiss and Krasnoperov utterly fails to teach or suggest such subject matter; specifically, a color modulator that is electronically coupled to an image processing unit and that “uses a first plurality of colors to output at least one image sub-frame of said plurality of image sub-frames and a second plurality of colors, **distinct from said first plurality of colors**, to output at least one other image sub-frame of said plurality of image sub-frames.” (Claim 48) (emphasis added). Neither Divelbiss nor Krasnoperov, alone or in any combination, teach or suggest a color modulator electronically coupled to an image processing unit that uses distinct pluralities of colors to generate different sub-frames.

As before, under the analysis required by *Graham v. John Deere*, 383 U.S. 1 (1966) to support a rejection under § 103, the scope and content of the prior art must first be

determined, followed by an assessment of the differences between the prior art and the claim at issue in view of the ordinary skill in the art. In the present case, the scope and content of the prior art, as evidenced by Divelbiss and Krasnoperov clearly did not include the subject matter of claim 48. Therefore, the cited prior art will not support a rejection of claim 48 and its dependent claims under 35 U.S.C. § 103 and *Graham*.

Claim 66:

Additionally, independent claim 66 recites:

A system for displaying an image in three dimensions during a frame period, said system comprising:

means for generating a left image sub-frame and a right image sub-frame, said left image sub-frame defining a visual perspective of a left eye and said right image sub-frame defining a visual perspective of a right eye for said image;

*means for electronically displaying said left image sub-frame utilizing a first plurality of colors to compose the display of the left image sub-frame; and*

*means for electronically displaying said right image sub-frame utilizing a second plurality of colors to compose the display of the right image sub-frame;*

*wherein said first plurality of colors is distinct from said second plurality of colors.*

(Emphasis added).

As demonstrated above, Divelbiss and Krasnoperov fail to teach or suggest this subject matter; specifically, a system including means for displaying left and right image sub-frames utilizing distinct first and second pluralities of colors. Under the analysis required by *Graham v. John Deere*, 383 U.S. 1 (1966) to support a rejection under § 103, the scope and content of the prior art must first be determined, followed by an assessment of the differences between the prior art and the claim at issue in view of the ordinary skill in the art. In the present case, the scope and content of the prior art, as evidenced by Divelbiss and Krasnoperov clearly did not include the subject matter of claim 66. Therefore, the cited prior



art will not support a rejection of claim 66 and its dependent claims under 35 U.S.C. § 103 and *Graham*.

Claims 20 and 49:

Additionally, dependent claim 20 recites “wherein said first plurality of colors and said second plurality of colors comprise different sets of primary colors.” Claim 49 recites similar subject matter.

In this regard, the Answer argues that Karsnoperov teaches two sets of primary colors and that “while both sets are made up of the RGB spectrum, they are in fact distinct.” (Answer, p. 47). Appellant believes this is an unreasonable construction of the language of claims 20 and 49, particularly in view of the ordinary skill in the art as discussed above.

Claim 20 recites “wherein said first plurality of colors and said second plurality of colors comprise different sets of primary colors.” If Krasnoperov only teaches using one set of primary colors, RGB, how can the cited prior art teaches two different pluralities of colors that comprises “different sets of primary colors.”

As explained in Appellant’s specification and as well known in the art, there are different sets of primary colors from which all other colors can be derived. For example, red, green and blue are considered a set of primary colors. Cyan, yellow and magenta are considered another set of primary colors. (Appellant’s specification, paragraph 0047).

As demonstrated, Divelbiss and Krasnoperov do not teach or suggest first and second pluralities of colors. The both the Divelbiss and Krasnoperov systems use viewing glasses or filters that distinguish between green and magenta. Divelbiss and Krasnoperov only teach a single set of primary colors used in an electronic display of a 3D or stereoscopic image, i.e., red, green and blue. (Divelbiss, paragraph 0048-0059; Krasnoperov, col. 9, lines 40-44). For

at least this additional reason, claims 20 and 49 should be held clearly patentable over Divelbiss and Krasnoperov.

(12) Claims 27-30, 33-35 and 45 are patentable over Songer and McLaine:

Claim 27:

Independent claim 27 recites:

A display system with a selectable mode of operation for displaying an image frame in three dimensions (3D) or in two dimensions (2D), said system comprising:  
a spatial light modulator; and

*an image processing unit configured to control said spatial light modulator in a selected mode of operation which is either a 3D mode of operation or a 2D mode of operation;*

wherein if said selected mode of operation is said 3D mode of operation, said image processing unit outputs to said spatial light modulator a left image sub-frame carrying a left eye perspective and a right image sub-frame carrying a right eye perspective during a frame period and, if said selected mode of operation is said 2D mode of operation, said image processing unit outputs to said spatial light modulator a 2D image frame to be displayed on a viewing surface during said frame period.

(emphasis added).

In contrast, Songer does not teach or suggest any of the subject matter of claim 27.

First, Songer does not teach or suggest a spatial light modulator. Songer teaches a “system and method for imaging and viewing, by a viewer, color and monochrome three-dimensional and two-dimensional. images for broadcasting in accordance with NTSC, PAL, SECAM, and other world-wide electronic viewing formats.” (Songer, abstract). The broadcast signal is display, for example, on a television set. (Songer, Fig. 1). Songer does not mention a spatial light modulator.

In this regard, the Answer argues that a “television (or movie screen) meets the limitation of an SLM as defined in Appellant’s specification.” (Answer, p. 47). This is a clear misreading of Appellant’s specification, which states that “[a]n SLM is a device that modulates *incident* light in a spatial pattern corresponding to an electrical or optical input.”

(Appellant's specification, para. 0025) (emphasis added). In contrast, a television generates its own light, it does not modulate "incident" light. A movie screen merely reflects light and does not modulate incident light in a pattern corresponding to an electrical or optical input. Thus, the Answer's position that the cited prior art teaches an SLM as claimed is utterly misplaced and an unreasonable stretching of the claim language.

More importantly, Songer does not teach or suggest the claimed image processing unit configured to control a spatial light modulator where "if said selected mode of operation is said 3D mode of operation, said image processing unit outputs to said spatial light modulator a left image sub-frame carrying a left eye perspective and a right image sub-frame carrying a right eye perspective during a frame period and, if said selected mode of operation is said 2D mode of operation, said image processing unit outputs to said spatial light modulator a 2D image frame to be displayed on a viewing surface during said frame period." Rather, Songer teaches that the "plurality of left-eye images and the plurality of right-eye images appear three-dimensional when viewed through the pair of viewing glasses, and appear two-dimensional when viewed without the glasses." (Songer, abstract). Thus, the display remains the same, but "appear[s] three-dimensional when viewed through the pair of viewing glasses, and appear[s] two-dimensional when viewed without the glasses." (*Id.*). Clearly, Songer does not teach or suggest the claimed image processing unit that controls a spatial light modulator differently in a 3D mode than a 2D mode. Rather, Songer merely teaches a display that remains constant, but may be viewed with or without special glasses.

Thus, Songer fails to teach or suggest either the spatial light modulator or the image processing unit as recited in claim 27. Consequently, the latest Office Action cites to McLaine.

However, as demonstrated above, McLaine teaches the following.

A simple switch 890 allows a user to switch between normal color television reception and 3-dimensional color television reception. In normal mode all three image planes from right decoder 860 are fed to color television display 870. In 3-dimensional color television mode, a user might dial up the video information provider over network 880 and request 3-dimensional service. *The video information provider would then allow, after suitable arrangements for compensation have been made, the user to download the red image plane of the left camera 800 to complete the 3-dimensional image.* The presence of 3-dimensional image data on the point to point communications link can be detected automatically and utilized to control switch 890 so that 3-dimensional information is displayed when 3-dimensional information is available and otherwise 2-dimensional information is displayed. (McLaine, col. 8, line 63 to col. 9, line 12).

Thus, McLaine also fails to teach or suggest the claimed system with “an image processing unit configured *to control said spatial light modulator in a selected mode of operation* which is either a 3D mode of operation or a 2D mode of operation.” (Claim 27). McLaine does not even mention a spatial light modulator. Consequently, McLaine fails to teach or suggest the claimed image processing unit controlling a spatial light modulator as recited in claim 27.

Consequently, neither Songer nor McLaine teach or suggest the elements of the claims system including a spatial light modulator and an image processing unit configured to control such a spatial light modulator in a selected 3D or 2D mode of operation.

Under the analysis required by *Graham v. John Deere*, 383 U.S. 1 (1966) to support a rejection under § 103, the scope and content of the prior art must first be determined, followed by an assessment of the differences between the prior art and the claim at issue in view of the ordinary skill in the art. In the present case, the scope and content of the prior art, as evidenced by Songer and McLaine, did not encompass the claimed system including a spatial light modulator or an image processing unit configured to control such a spatial light modulator in a selected 3D or 2D mode of operation.. Moreover, as explained in Appellant’s claims, the differences between the prior art and the claimed subject matter are significant

because the system of claim 27 provides advantages that were not available in the cited prior art. Consequently, the cited prior art will not support a rejection of claim 27 and its dependent claims under 35 U.S.C. § 103 and *Graham*.

Claim 28:

Claim 28 recites:

wherein said image processing unit comprises:  
a 3D coordinate conversion function configured to generate left and right image sub-frame data defining said left and right image sub-frames;  
wherein said spatial light modulator is configured to generate said left and right image sub-frames in accordance with said left and right image sub-frame data.

As demonstrated above, the cited prior art fails to teach or suggest the claimed image processing unit. Consequently, the cited prior art must also fail to teach or suggest the additional subject matter of claim 28. Therefore, the rejection of claim 28 should not be sustained.

Claim 29:

Claim 29 recites:

wherein said image processing unit further comprises:  
a 2D coordinate conversion function configured to generate 2D image frame data defining said 2D image frame;  
wherein said spatial light modulator is further configured to generate said 2D image frame in accordance with said 2D image frame data.

As demonstrated above, the cited prior art fails to teach or suggest the claimed image processing unit. Consequently, the cited prior art must also fail to teach or suggest the additional subject matter of claim 29. Therefore, the rejection of claim 29 should not be sustained.

(13) Claim 30 is patentable over Songer, McLaine and Stuetzler:

Claim 30 is patentable over the cited prior art for at least the same reasons given above in favor of the patentability of claims 27 and 29.

(14) Claims 31 and 32 are patentable over Songer, McLaine, Stuetzler and Hochmuth:

Claims 31 and 32 are patentable over the cited prior art for at least the same reasons given above in favor of the patentability of claims 27 and 29.

(15) Claims 36-38 are patentable over Songer, McLaine and Krasnoperov:

Claim 36 recites “wherein said left image sub-frame comprises a first group of colors and said right image sub-frame comprises a second group of colors distinct from said first group of colors.” Claims 37 and 38 recite related subject matter. As demonstrated above with respect to claim 19, the cited prior art fails to teach or suggest this subject matter. Consequently, this rejection should not be sustained.

(16) Claims 39 and 40 are patentable over Songer, McLaine, Krasnoperov and Divelbiss:

Claim 39 recites “wherein said system further comprises a sequential color device configured to generate said colors in said first and second groups of colors.” Claim 40 recites related subject matter. As demonstrated above with respect to claim 19, the cited prior art fails to teach or suggest first and second distinct groups of colors. Consequently, the cited prior art must also fails to teach or suggest this related subject matter of claims 39 and 40. Therefore, this rejection should not be sustained.

(17) Claim 41 is patentable over Songer, McLaine, Krasnoperov and Sato:

Claim 41 recites “wherein said system further comprises a parallel color device configured to generate said colors in said first and second groups of colors.” As demonstrated above with respect to claim 19, the cited prior art fails to teach or suggest first and second distinct groups of colors. Consequently, the cited prior art must also fails to teach or suggest this related subject matter of claim 41. Therefore, this rejection should not be sustained.

(18) Claims 43 and 44 are patentable over Songer, McLaine, Krasnoperov and Bolas:

Claims 43 and 44 are patentable over the cited prior art for at least the same reasons given above in favor of the patentability of claim 27.

(19) Claim 47 is patentable over Songer, McLaine and Anderson:

Claim 47 is patentable over the cited prior art for at least the same reasons given above in favor of the patentability of claim 27.

(20) Claims 50 and 54 are patentable over Divelbiss, Krasnoperov and Stuetzler:

Claims 50 and 54 are patentable over the cited prior art for at least the same reasons given above in favor of the patentability of claim 48.

(21) Claims 51 and 52 are patentable over Divelbiss, Krasnoperov and Bolas:

Claims 51 and 52 are patentable over the cited prior art for at least the same reasons given above in favor of the patentability of claim 48.

(22) Claim 57 is patentable over Divelbiss, Krasnoperov and Songer:

Claim 57 is patentable over the cited prior art for at least the same reasons given above in favor of the patentability of claim 48.

(23) Claims 61, 64 and 65 are patentable over Songer, Smith and Taniguchi:

Claim 61:

Independent claim 61 recites:

A system for displaying an image frame by projection in three dimensions (3D) or in two dimensions (2D) with a projection system, said system comprising:  
 means for selecting between a 2D mode of operation and a separate 3D mode of operation for said projection system;  
 means for generating and projecting a left image sub-frame and a right image sub-frame if said 3D mode of operation is selected for said projection system; and  
 means for generating and projecting a 2D image frame if said 2D mode of operation is selected for said projection system;  
 wherein said left and right image sub-frames are left and right perspectives during a frame period if said 3D mode of operation is selected and said 2D image frame is displayed during said frame period if said 2D mode of operation is selected;  
*wherein said 2D image frame does not comprise sub-frames having different perspectives.*

(Emphasis added).

As noted above, this claim is rejected based on a proposed combination of the teachings of Songer, Smith and Taniguchi. However, that proposed combination of prior art teachings is unreasonable and would not have been obvious to one of skill in the art.

The teachings of Songer/Smith and Taniguchi work on entirely different principles and are incompatible. Songer and Smith both teach systems in which 3D images are perceived using mechanical viewing glasses with left and right light valves that open and close at a field rate and in synchronization with a displayed 3D image. (Songer, abstract; Smith, paragraph 0026). In contrast, Taniguchi teaches a “parallax optic” that is selectively activated over an LCD to generate a perception of 3D viewing. (Taniguchi,



paragraph 0009). This technique for creating a 3D display would not work with, and cannot be used in, a projected display. Claim 61 is a projection display system with “means for generating *and projecting*’3D mode sub-frames or 2D mode image frames.

In this regard, the Answer argues that one of ordinary skill in the art would have appreciated how this combination could work “when paired with McLaine (figure 8).” (Answer, p. 52). However, McLaine was not cited in the rejection of claim 61. Consequently, the Examiner appears to be conceding that the actually-asserted prior art combination fails to render obvious the claimed subject matter and expressing a desire to rewrite the rejection to include McLaine.

It would be difficult, and cannot be legally required, for the Appellant to respond to a rejection that the Examiner has never actually made or fully articulated. Accordingly, the Examiner has failed to satisfactorily explain how or why the very different systems of the prior art could be combined to approximate the claimed invention or why one of skill in the art would have found it obvious to do so. Consequently, the teachings of Taniguchi cannot reasonably be combined with those of Songer and Smith as proposed in the final Office Action, and the rejection of claim 61 and its dependent claims should not be sustained.

Additionally, the Answer notes that Taniguchi is being cited as “stating that the 3D image is captured by a normal 2D camera and then converted into a 3D image by performing a conversion to create a left and right image. Therefore the 2D image is not comprised of sub-frames having different perspectives.” (Answer, p. 52). What Taniguchi says in this regard relates to a mobile phone that includes a camera and reads as follows.

[0082] First display portion 5 is set to a 2D-image display mode when a user takes a picture with camera portion 21 using first display portion 5 as a viewfinder. That is, first display portion 5 is set to the 2D-image display mode when mobile phone 1 of the present embodiment is set to an image pick-up mode by key operation or the like. *The image picked up by camera portion 21 is normally generated as a 2D image,*

*without being divided into left-eye and right-eye images, until it is subjected to special conversion into a 3D image.*

...

[0084]... *Alternatively, a 3D conversion function may be incorporated in mobile phone 1, and the picture picked up by the camera portion in mobile phone 1 itself may be displayed after converted into 3D image data divided corresponding to the left and right eyes.* Still alternatively, mobile phone 1 may receive and display 3D image data transmitted from another mobile phone having a similar function.

(Taniguchi, paragraphs 0082-84) (emphasis added).

Appellant respectfully submits that Taniguchi does not enable the subject matter described. Taniguchi mentions converting a 2D image into a 3D image, but never explains how this might be done. MPEP § 2121.01.

For any and all of these reasons, the proposed combination of Songer, Smith and Taniguchi does not render claim 61 obvious. Consequently, the rejection of claim 61 and its dependent claims should not be sustained.

(24) Claims 62 and 63 are patentable over Songer, McLaine, Smith, Taniguchi and Stuetzler:

Claims 52 and 63 are patentable over the cited prior art for at least the same reasons given above in favor of the patentability of claim 61.

(25) Claim 67 is patentable over Songer, McLaine, Smith and Taniguchi:

Claim 67 is patentable over the cited prior art for at least the same reasons given above in favor of the patentability of claim 1.

In view of the foregoing, it is submitted that the final rejection of the pending claims is improper and should not be sustained. Therefore, a reversal of the rejections against Appellant's claims is respectfully requested.

Respectfully submitted,

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